

Amendments to the Claims

The following listing of claims will replace all prior versions of claims in the application.

1. (currently amended) A method of producing $\text{Li}_y[\text{Ni}_x\text{Co}_{1-2x}\text{Mn}_x]\text{O}_2$ wherein $0.025 \leq x < 0.35$, and $0.9 \leq y \leq 1.3$, the method comprising:
mixing $[\text{Ni}_x\text{Co}_{1-2x}\text{Mn}_x]\text{OH}_2$ with LiOH or Li_2CO_3 and a boron compound as sintering agent to form a resulting mixture; and
heating the resulting mixture until a composition of $\text{Li}_y[\text{Ni}_x\text{Co}_{1-2x}\text{Mn}_x]\text{O}_2$ having a pellet density of at least 3.3 g/cm^3 from about 3.3 to about 4.0 g/cm^3 is obtained for use in a lithium-ion battery, to form a densified composition of $\text{Li}_y[\text{Ni}_x\text{Co}_{1-2x}\text{Mn}_x]\text{O}_2$, wherein the total amount of boron compound(s) is greater than 0.2% and up to about 10% of the total weight of the mixture.
2. (previously presented) The method of claim 1 wherein the resulting mixture is heated to at least 900°C .
3. (previously presented) The method of claim 1 wherein the resulting mixture is heated for at least 3 hours.
4. (previously presented) The method of claim 1 wherein the resulting mixture is heated for at least 6 hours.
5. (currently amended) The method of claim 1 wherein the amount of sintering agent being mixed is ~~about 0.1~~ greater than 0.2% to about 5.0 weight percent of the resulting mixture.
6. (currently amended) The method of claim 1 wherein the amount of sintering agent being mixed is ~~in the range of about~~ greater than 0.2% to about 3.0 weight percent of the resulting mixture.

7. (original) The method of claim 5 wherein the resulting mixture is heated for about 3 hours.
8. (canceled)
9. (currently amended) The method of claim 1 characterized by the resulting densified composition of $\text{Li}_y[\text{Ni}_x\text{Co}_{1-2x}\text{Mn}_3]\text{O}_{2x}$ exhibiting a reversible volumetric energy of at least [1833 - 333x] measured in Wh/L, wherein $0.025 \leq x < 0.35$.
10. (currently amended) The method of claim 1 wherein the pellet density of the resulting densified composition of $\text{Li}_y[\text{Ni}_x\text{Co}_{1-2x}\text{Mn}_3]\text{O}_2$ is at least 72 percent of theoretical density.
11. (canceled)
12. (canceled)
13. (canceled)
14. (canceled)
15. (currently amended) The method of ~~claim 14~~ claim 1 wherein said sintering agent is selected from the group consisting of boron oxide, boric acid, and lithium borates.
16. (withdrawn) A lithium transition metal oxide composition produced by the method of claim 1 and exhibiting a reversible volumetric energy of at least [1833 - 333x] measured in Wh/L.

17. (withdrawn) A lithium transition metal oxide for use in a lithium-ion battery having the general formula of $\text{Li}_y[\text{Ni}_x\text{Co}_{1-2x}\text{Mn}_x]\text{O}_2$ wherein $0.025 \leq x < 0.35$, and $0.9 \leq y \leq 1.3$, and exhibiting a minimum reversible volumetric energy characterized by the formula $[1833 - 333x]$ measured in Wh/L.

18. (withdrawn) The lithium transition metal oxide of claim 16 exhibiting a pellet density of at least 72% of theoretical density.

19. (withdrawn) The lithium transition metal oxide of claim 17 exhibiting a pellet density of at least 72% of theoretical density.

20. (withdrawn) The lithium transition metal oxide of claim 19 that is formed into a lithium ion battery electrode having a reversible volumetric energy in the range of 1500 to 2200 Wh/L.

21. (currently amended) A method of producing $\text{Li}_y[\text{Ni}_x\text{Co}_{1-2x}\text{Mn}_x]\text{O}_2$ wherein $0.025 \leq x \leq 0.45$, and $0.9 \leq y \leq 1.3$, the method comprising:

mixing $[\text{Ni}_x\text{Co}_{1-2x}\text{Mn}_x]\text{OH}_2$ with LiOH or Li_2CO_3 and at least one alkali metal fluoride to form a resulting mixture; and

heating the resulting mixture until a composition of $\text{Li}_y[\text{Ni}_x\text{Co}_{1-2x}\text{Mn}_x]\text{O}_2$ having a pellet density from about $3.3 \frac{\text{g}}{\text{cm}^3}$ to about $4.0 \frac{\text{g}}{\text{cm}^3}$ is obtained for use in a lithium-ion battery, wherein the total amount of alkali fluorides is greater than 0.2% and up to about 10% of the total weight of the mixture.

22. (previously presented) A lithium transition metal oxide composition produced by the method of claim 21 and exhibiting a minimum reversible volumetric energy characterized by the formula $[1833 - 333x]$ measured in Wh/L, wherein $0.025 \leq x \leq 0.45$.